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COLONIES AND TRADE.

No. I.

PALMYRA-TREE SUGAR AND HILL-PADDY.

The Thanks of the Society were presented to Captain JOHN CAMPBELL, Assistant-Surveyor-General of the Madras Army, for the following Communication on Sugar made from the Palmyra-tree, and on the Cultivation of Hill-Paddy.

SIR,

Ryacottah, 17th Dec. 1839.

ON looking over the fifty-first volume of the *Transactions of the Society* (the first I have seen for many years), at page 156, in your paper on Saccharine Substances, I observe that the sugar made from the palmyra-tree is remarked on. This sugar is not only made in Ava, but is in great abundance in the Peninsula of India, over all the southern parts of which the palmyra-tree exists in great profusion, particularly on all the extensive sandy and salt plains extending along the sea-shore on the eastern coasts. The sugar generally called *jaggery* by Europeans is made from the juice given out from the foot-stalk of the male tree after cutting off the flower. The juice or sap is simply inspissated in earthen pots

over a fire made of the dry leaves of trees and their footstalks; and, after being sufficiently concentrated, the thick mass is allowed to cool. It always remains in a moist state, and imperfectly crystallises. It is used extensively to mix with mortar in building, and in making the common spirit of the country, arrack. The price inland, where the palmyra-tree is in abundance, is one rupee per maund of 25 lbs., very nearly the price mentioned for it in Ava. On the sea-side on the eastern coast, I believe its price to be less than a rupee. The *peons-goor* is commonly applied to this sugar in the Hindoostanee language as well as to any coarse sugar.

At page 80 of the same volume, I observe a communication regarding the hill-paddy or rice, by which I learn that its cultivation is exciting interest in England; and the following observations may be interesting to the Society.

The hill-paddy is common all over India among the hill parts. I have seen it growing among the hills of Joomsoor, a mountainous table-land in Orissa, sixty miles north-west from Berhampore (Burrampoor—*Hamilton*); and, I believe, on all the hills in the south of India, Shwarry, Neilghery, Palney hills, and various others. On the Joomsoor hills, where I saw it growing, there are two kinds of paddy, one the common kind which is grown in little steps or terraces of twelve or fifteen feet wide, made by building walls of loose stones across the beds of the small streams which come down from the declivities of the hills, and inside of which brushwood and leaves are placed to catch and retain the *débris* and alluvium brought down by the stream. A year or two fills up these steps, and on them the paddy is grown in the usual manner. The other kind of paddy

to which, most likely, Dr. Wallich refers, is grown *dry*, and perishes if drowned like the common paddy; and in this you will see the reason of the failure of Mr. Anderson's experiment, which was, of course, caused by the excess of water, and not by the climate.

With regard to the climate of Joomsoor, I can state nothing certain as to the average temperature; for I have seen it freezing, and sometimes the thermometer at 90° . But as this paddy is cultivated at the foot of the rock from which I write, I can, in consequence, inform you of what climate is necessary to ripen it. The paddy has now been cut ten days, and the average temperature for a month preceding has been about 68° of Fahr.; and I have, therefore, little doubt that rice would ripen in England: the sun's radiating power will, of course, make considerable difference; for the sky here has been nearly cloudless for the last month, while the clouds of England would deprive the plant, in some measure, of the sun's rays; but I have reason to believe that, as Daniell has stated, the power of solar radiation is much higher in high latitudes than near the equator; for I find Leslie's photometer (by W. and S. Jones) only moves through 40° with the hottest sun, while a summer's sun in England would probably shew a much higher power. I am aware that I am touching on a disputed subject, but have reason to believe that Daniell's hypothesis is correct; at least, the arguments and observations against it are very inconclusive. Mr. Foggos, in the 27th volume of the *Edinburgh Philosophical Journal*, most satisfactorily proves what he wishes to disprove. He states, that his blackened thermometer rose to 150° of Fahr. in the sun; while in India, in the very hottest part of it, and in the

hottest weather, with the thermometer at 95°, a blackened one in the sun will never rise above 127°.

I, therefore, consider that the climate of England will ripen paddy; but it is necessary to be careful not to drown the paddy, but merely to keep the soil *saturated* with water or nearly so. At the bottom of this hill the paddy gets no moisture but by rain and the draining from the rock. The soil it grows in, both in Joomsoor and here, is a poor gravelly soil containing much iron; but not at all clayey, like what the *débris* of a granite rock might be conceived to be, mixed with a little alumina and peroxide of iron.

Such soils are common among Indian primary rocks; and, from the resemblance of the Cornish geology (as described by Dr. Boase), I conceive such a soil might be easily found there,—most likely in the proximity of the clay slates, and gneiss.

I have been particular in mentioning this, as it is in such soils I have always seen the paddy growing, and am of opinion, that a rich soil or a clayey one would kill it.

I do not endeavour to state the mode of culture, or the return for the seed, as the mode here can bear little analogy to that required in Europe; and if it does succeed, it will probably only be as a curiosity. The quality of the rice is considered very inferior by the natives, and they will not eat it unless accustomed to it, as they consider it rather indigestible.

A. AIKIN, Esq.

Secretary, &c. &c.

I am, Sir, &c. &c.

J. CAMPBELL, Captain,

Assistant-Surveyor-General, Madras Army.